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APPLICANT : NIPPON STEEL CORP;

INVENTOR : WAKITA JUNICHI;

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TITLE : HOT ROLLED HIGH STRENGTH STEEL SHEET EXCELLENT IN FORMABILITY, LOW TEMPERATURE TOUGHNESS AND FATIGUE PROPERTY

ABSTRACT : PURPOSE: To stably produce a hot rolled high strength steel sheet excellent in formability, low temp. toughness and fatigue properties at a low cost.

CONSTITUTION: This steel sheet has a compsn. contg., as chemical components, by weight, 0.05 to <0.25% C, 0.5 to 3.5% Si+Al, 0.5 to 3.5% Mn, $\leq 0.05\%$ P, $\leq 0.01\%$ S and Fe as essential components, has a microstructure of three phases of ferrite, bainite and retained austenite as main phases, in which the content of ferrite having ≥ 150 Vickers hardness and $\leq 5\mu\text{m}$ grain size is regulated to $\geq 50\%$ and the content of retained austenite having $\geq 0.9\%$ carbon concn. and $\leq 2\mu\text{m}$ grain size is regulated to $\geq 5\%$ and has characteristics of tensile strength (TS)=490 to 1180MPa, the balance of strength-ductility (tensile strength μ total elongation) of ≥ 20000 (Mpa.%), the balance of strength-stretch flanging properties (tensile strength \times bore expanding ration ≥ 75000 (MPa.%), fracture appearance transition temp. of $\leq -40^\circ\text{C}$ and fatigue limit ratio of ≥ 0.45 .

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